

Table 1. Generalized Sensitivity Analysis Results: Minimum, maximum and mean/mode for initial parameter distributions and posterior distributions for 3 different SPAF criteria

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS				ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
		Min	Max	Mean/ mode	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	
Environmental Parameters	Units	Min	Max	Mean/ mode	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	
Total concentration of PCBs in the water column	ng/L	0.20	3.1	mode = 1.4	0.20	3.1	1.6	0.22	3.0	1.3	0.31	1.1	0.72	
Concentration of particulate organic carbon (POC) in the water column	kg/L	1.0×10^{-7}	4.2×10^{-7}	mean = 2.6×10^{-7}	1.0×10^{-7}	4.2×10^{-7}	2.6×10^{-7}	1.3×10^{-7}	4.0×10^{-7}	2.6×10^{-7}	2.1×10^{-7}	2.7×10^{-7}	2.3×10^{-7}	
Dissolved organic carbon (DOC) in the water column	kg/L	1.4×10^{-6}	3.1×10^{-6}	mean = 2.2×10^{-6}	1.3×10^{-6}	3.1×10^{-6}	2.2×10^{-6}	1.4×10^{-6}	3.0×10^{-6}	2.2×10^{-6}	1.6×10^{-6}	2.3×10^{-6}	2.0×10^{-6}	
Mean water column temperature	°C	9.7	12.8	mean = 11.2	9.7	12.8	11.2	9.8	12.2	11.1	11.1	12.2	11.5	
Dissolved oxygen concentration in the water column	mg/L	7.2	8.8	mean = 7.9	7.2	8.7	7.9	7.3	8.6	7.9	7.5	8.2	7.9	
Total suspended solids in the water column	kg/L	2.7×10^{-6}	8.9×10^{-6}	mean = 5.8×10^{-6}	2.7×10^{-6}	8.9×10^{-6}	5.8×10^{-6}	3.1×10^{-6}	8.9×10^{-6}	5.8×10^{-6}	4.9×10^{-6}	7.4×10^{-6}	6.2×10^{-6}	
Concentration of PCBs in sediment	µg/kg dw	390	390	390	390	390	390	390	390	390	390	390	390	
Sediment total organic carbon	%	1.77	1.95	mean = 1.86	1.77	1.95	1.86	1.77	1.94	1.86	1.85	1.91	1.87	

DRAFT

1

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
		MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
CHEMICAL PARAMETERS	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Octanol-water partition coefficient for PCBs (log K _{ow})	unitless	6.4	6.8	mean = 6.6	6.4	6.8	6.6	6.4	6.7	6.6	6.5	6.7	6.6
BIOLOGICAL PARAMETERS	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Proportionality constant expressing the sorption capacity of NLOM relative to that of octanol (β or MAF)	unitless	0.016	0.052	mean = 0.035	0.016	0.051	0.035	0.016	0.045	0.033	0.022	0.040	0.032
Resistance to chemical uptake through aqueous phase for phytoplankton/algae (A)	day ⁻¹	2 × 10 ⁻⁵	1 × 10 ⁻⁴	mean = 6 × 10 ⁻⁵	2 × 10 ⁻⁵	1 × 10 ⁻⁴	6 × 10 ⁻⁵	3 × 10 ⁻⁵	9 × 10 ⁻⁵	6 × 10 ⁻⁵	5 × 10 ⁻⁵	8 × 10 ⁻⁵	6 × 10 ⁻⁵
Resistance to chemical uptake through organic phase for phytoplankton/algae (B)	unitless	1.9	9.2	mode = 5.5	1.8	9.2	5.5	2.1	9.0	5.5	3.2	8.0	5.8
Density of lipids	kg/L	0.80	1.0	mode = 0.90	0.80	1.0	0.90	0.80	1.0	0.91	0.88	0.98	0.92
PHYTOPLANKTON	UNITS	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Lipid content of organism	%	0.000011	0.31	mean = 0.12	0.00040	0.31	0.12	0.0021	0.26	0.12	0.090	0.24	0.16
Water content of organism	%	93.7	97.9	mean = 95.6	93.8	97.9	95.6	93.8	97.0	95.6	95.0	97.0	95.8
ZOOPLANKTON	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Organism weight	kg	2.0 × 10 ⁻⁸	3.1 × 10 ⁻⁷	mean = 1.6 × 10 ⁻⁷	2.0 × 10 ⁻⁸	3.1 × 10 ⁻⁷	1.6 × 10 ⁻⁷	5.2 × 10 ⁻⁸	2.7 × 10 ⁻⁷	1.6 × 10 ⁻⁷	1.0 × 10 ⁻⁷	1.8 × 10 ⁻⁷	1.5 × 10 ⁻⁷
Lipid content	%	0.20	2.3	mean = 1.2	0.20	2.3	1.2	0.30	2.3	1.2	0.70	1.3	1.1
Water content of organism	%	84	95	mean = 90	84	95	90	84	95	90	88	93	89

DRAFT

2

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
BENTHIC INVERTEBRATES	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Dietary absorption efficiency of lipids (alpha)	%	55	85	mode = 72	55	85	71	56	84	71	68	78	73
Dietary absorption efficiency of NLOM (beta)	%	55	85	mode = 72	55	85	71	56	84	71	62	81	71
JUVENILE FISH	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Organism weight	kg	1.37×10^{-7}	1.29×10^{-4}	mean = 5.1×10^{-5}	1.37×10^{-7}	1.29×10^{-4}	5.04×10^{-5}	2.63×10^{-7}	1.07×10^{-4}	4.46×10^{-5}	3.27×10^{-6}	6.44×10^{-5}	2.92×10^{-5}
Lipid content	%	0.7	1.1	mean = 0.89	0.7	1.1	0.90	0.7	1.0	0.9	0.8	0.9	0.8
Water content of organism	%	71	87	mean = 80	71	87	80	72	87	81	82	86	85
Relative fraction of porewater ventilated	unitless	0.05	0.25	mode = 0.20	0.05	0.25	0.16	0.05	0.25	0.14	0.07	0.17	0.10
Dietary absorption efficiency of lipids (alpha)	%	15	95	mode = 75	15	95	61	17	95	61	59	83	65
Dietary absorption efficiency of NLOM (beta)	%	17	95	mode = 75	17	95	61	17	94	51	24	74	45
Organism weight	kg	0.004	0.009	mean = 0.006	0.004	0.009	0.006	0.004	0.008	0.006	0.005	0.006	0.006
Lipid content	%	0.4	4.9	mean = 2.5	0.4	4.9	2.5	0.7	4.3	2.4	2.0	2.6	2.3
Water content of organism	%	66.0	81.4	mean = 73.9	66.0	81.4	73.9	67.7	80.2	73.9	71.2	76.3	73.5
Relative fraction of porewater ventilated	unitless	0.005	0.020	mode = 0.010	0.005	0.020	0.012	0.005	0.019	0.011	0.009	0.015	0.012
Dietary absorption efficiency of lipids (alpha)	%	90	95	mode = 92	90	95	92	90	95	92	90	94	92

DRAFT

3

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
SLENDER CRAB	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Dietary absorption efficiency of NLOM (beta)	%	50	65	mode = 60	50	65	58	51	65	58	57	61	59
Organism weight	kg	0.152	0.182	mean = 0.167	0.152	0.182	0.167	0.155	0.180	0.167	0.161	0.170	0.166
Lipid content	%	0.8	1.3	mean = 1.1	0.8	1.3	1.1	0.9	1.3	1.1	1.1	1.3	1.1
Water content of organism	%	81.6	85.5	mean = 83.6	81.6	85.5	83.6	81.9	85.3	83.6	82.7	84.5	83.7
Relative fraction of porewater ventilated	unitless	0.01	0.03	mode = 0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03	0.02
Dietary absorption efficiency of lipids (alpha)	%	17	95	mode = 75	17	95	62	18	95	62	45	81	65
Dietary absorption efficiency of NLOM (beta)	%	17	96	mode = 75	17	96	62	17	96	62	49	81	67
DUNGENESS CRAB	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Organism weight	kg	0.321	0.749	mean = 0.528	0.321	0.749	0.529	0.326	0.724	0.525	0.441	0.585	0.522
Lipid content	%	0.8	4.5	mean = 2.6	0.8	4.5	2.6	1.3	4.1	2.6	2.0	3.1	2.6
Water content of organism	%	75.0	89.0	mean = 82	75.5	89.0	82.0	77.1	87.0	82.0	79.3	85.0	81.5
Relative fraction of porewater ventilated	unitless	0.01	0.03	mode = 0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.02	0.02	0.02
Dietary absorption efficiency of lipids (alpha)	%	16	96	mode = 75	16	96	62	18	94	61	41	68	60
Dietary absorption efficiency of NLOM (beta)	%	15	96	mode = 75	15	96	62	20	94	61	44	92	67

DRAFT

4

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
		MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
PACIFIC STAGHORN SCULPIN	UNITS												
Organism weight	kg	0.062	0.089	mean = 0.077	0.062	0.089	0.077	0.062	0.088	0.077	0.070	0.083	0.076
Lipid content	%	1.8	2.3	mean = 2.1	1.8	2.3	2.1	1.9	2.3	2.1	1.9	2.2	2.1
Water content of organism	%	78.7	79.3	mean = 79.0	78.7	79.3	79.0	78.7	79.3	79.0	79.0	79.3	79.0
Relative fraction of porewater ventilated	unitless	0.02	0.10	mode = 0.05	0.02	0.10	0.06	0.02	0.10	0.06	0.03	0.09	0.06
Dietary absorption efficiency of lipids (alpha)	%	90	95	mode = 92	90	95	92	90	95	92	92	94	92
Dietary absorption efficiency of NLOM (beta)	%	50	65	mode = 60	50	65	58	50	65	58	53	58	55
SHINER SURFPERCH	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Organism weight	kg	0.017	0.021	mean = 0.019	0.017	0.021	0.019	0.018	0.020	0.019	0.019	0.020	0.019
Lipid content	%	3.8	5.3	mean = 4.6	3.8	5.3	4.6	3.9	5.2	4.6	4.6	4.8	4.7
Water content of organism	%	72.8	75.0	mean = 73.9	72.8	75.0	73.9	73.0	74.9	73.9	73.4	73.9	73.7
Relative fraction of porewater ventilated	unitless	0.005	0.020	mode = 0.01	0.005	0.020	0.012	0.005	0.020	0.011	0.010	0.016	0.013
Dietary absorption efficiency of lipids (alpha)	%	90	95	mode = 92	90	95	92	90	95	92	91	95	92
Dietary absorption efficiency of NLOM (beta)	%	50	65	mode = 60	50	65	58	51	65	58	52	59	57
ENGLISH SOLE	UNITS	MIN	MAX	MEAN/MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Organism weight	kg	0.210	0.279	mean = 0.247	0.210	0.279	0.247	0.217	0.277	0.247	0.234	0.250	0.242

DRAFT

5

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
Lipid content	%	4.6	6.1	mean = 5.5	4.6	6.1	5.5	4.9	6.1	5.5	5.3	5.9	5.6
Water content of organism	%	73.9	76.1	mean = 75.0	73.9	76.1	75.0	74.1	75.9	75.0	74.8	75.3	75.0
Relative fraction of porewater ventilated	unitless	0.006	0.20	mode = 0.10	0.006	0.20	0.10	0.006	0.19	0.10	0.074	0.18	0.12
Dietary absorption efficiency of lipids (alpha)	%	90	95	mode = 92	90	95	92	90	95	92	91	94	93
Dietary absorption efficiency of NLOM (beta)	%	50	65	mode = 60	50	65	58	50	65	58	56	62	58
DIETARY TRIANGULAR DISTRIBUTIONS													
BENTHIC INVERTS	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.62	0.93	0.79	0.62	0.93	0.78	0.64	0.93	0.78	0.67	0.85	0.77
Phytoplankton	fraction	0.06	0.21	0.16	0.06	0.21	0.14	0.07	0.21	0.15	0.10	0.18	0.14
Zooplankton	fraction	0.01	0.17	0.05	0.01	0.17	0.08	0.02	0.17	0.08	0.04	0.14	0.07
JUVENILE FISH	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
Zooplankton	fraction	0.30	0.87	0.50	0.30	0.86	0.56	0.32	0.84	0.57	0.39	0.74	0.53
Benthic Invertebrate	fraction	0.13	0.70	0.50	0.14	0.70	0.44	0.14	0.69	0.43	0.24	0.61	0.39
SLENDER CRAB	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.00	0.05	0.00	0.00	0.05	0.02	0.00	0.05	0.02	0.00	0.04	0.02
Zooplankton	fraction	0.00	0.12	0.12	0.00	0.12	0.08	0.00	0.12	0.08	0.05	0.11	0.09
Benthic Invertebrate	fraction	0.86	0.99	0.87	0.86	0.99	0.91	0.86	0.99	0.91	0.87	0.96	0.90
Juvenile Fish	fraction	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

DRAFT

6

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

PARAMETER DESCRIPTION	UNITS	INITIAL PARAMETER INPUT DISTRIBUTIONS			ALL SPAFs <3			ALL SPAFs <2			ALL SPAFs < 1.5		
		MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
DUNGENESS CRAB	UNITS												
Sediment	fraction	0.00	0.05	0.00	0.00	0.05	0.02	0.00	0.05	0.02	0.00	0.03	0.02
Zooplankton	fraction	0.00	0.68	0.48	0.01	0.68	0.39	0.01	0.68	0.39	0.19	0.50	0.34
Benthic Invertebrate	fraction	0.16	0.84	0.16	0.16	0.83	0.39	0.16	0.82	0.39	0.17	0.44	0.31
Juvenile Fish	fraction	0.16	0.58	0.36	0.16	0.58	0.36	0.16	0.58	0.36	0.20	0.43	0.29
SCULPIN	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.00	0.05	0.00	0.00	0.05	0.02	0.00	0.05	0.02	0.00	0.03	0.01
Zooplankton	fraction	0.00	0.50	0.25	0.01	0.50	0.25	0.01	0.49	0.27	0.20	0.36	0.26
Benthic Invertebrate	fraction	0.04	0.83	0.50	0.06	0.82	0.46	0.07	0.82	0.47	0.07	0.75	0.34
Juvenile Fish	fraction	0.17	0.68	0.25	0.17	0.67	0.36	0.18	0.67	0.35	0.21	0.36	0.30
SHINER SURFPERCH	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Zooplankton	fraction	0.15	0.72	0.35	0.16	0.72	0.42	0.17	0.69	0.41	0.26	0.50	0.38
Benthic Invertebrate	fraction	0.28	0.85	0.64	0.28	0.85	0.60	0.32	0.84	0.60	0.57	0.77	0.67
ENGLISH SOLE	UNITS	MIN	MAX	MODE	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
Sediment	fraction	0.00	0.07	0.01	0.00	0.07	0.02	0.00	0.07	0.02	0.01	0.02	0.01
Phytoplankton	fraction	0.05	0.1	0.06	0.05	0.10	0.07	0.05	0.10	0.07	0.06	0.08	0.07
Zooplankton	fraction	0.00	0.08	0.05	0.00	0.08	0.04	0.00	0.08	0.04	0.02	0.06	0.04
Benthic Invertebrate	fraction	0.86	0.90	0.88	0.86	0.90	0.88	0.86	0.90	0.88	0.88	0.89	0.89

SPAF – Species Predictive Accuracy Factor

Note – The range of values for each of the input parameters is affected by the SPAF criteria for any trophic box that is influenced by the parameter. So, for example, the range on the phytoplankton lipid content parameter is updated by the GSA process even though there are no empirical data for phytoplankton.

DRAFT

7

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only

Table 2. Generalized Sensitivity Analysis: Number of runs passing at various SPAF levels¹.

NUMBER OF RUNS PASSING								
SPAF LEVEL	MEAN SPAF	ALL SPAF	BENTHIC INVERTEBRATE	SLENDER CRAB	DUNGENESS CRAB	STAGHORN SCULPIN	SHINER SURFPERCH	ENGLISH SOLE
1.5	1145	6	33	3682	2876	219	5318	3127
2	4809	716	1091	5096	4427	1828	5487	5427
3	5490	4852	5221	5480	5350	5090	5490	5490
PERCENTAGE OF RUNS PASSING (%)								
SPAF LEVEL	MEAN SPAF	ALL SPAF	BENTHIC INVERTEBRATE	SLENDER CRAB	DUNGENESS CRAB	STAGHORN SCULPIN	SHINER SURFPERCH	ENGLISH SOLE
1.5	20.9	0.1	0.6	67.1	52.4	4.0	96.9	57
2	87.6	13.0	19.9	92.8	80.6	33.3	99.9	98.9
3	100	88.4	95.1	99.8	97.4	92.7	100	100

SPAF – Species Predictive Accuracy Factor

¹ The percentage of runs passing was calculated by dividing the number of runs that met a SPAF criterion by the number of runs that passed the normalized diet filter. Of the 20,000 runs, 5490 (27.5%) passed the normalized diet filter.

DRAFT

8

Prepared by WindWard environmental LLC

October 5, 2006
For Discussion Purposes Only